DOCUMENT RESUME

ED 246 029 SP 024 896

AUTHOR Kilgore, Alvah M.
TITLE Models of Teaching and Teacher Education.
PUB DATE Mar 84
NOTE 20p.; In: Egbert, Robert L., Ed., and Kluender, Mary M., Ed. Using Research to Improve Teacher Education: The Nebraska Consortium. Teacher Education Monograph No. 1. (SP 024 888), p108-26.
PUB TYPE Reports - Descriptive (141) -- Information Analyses (070)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Advance Organizers; *Behavior Modification; Concept Formation; *Concept Teaching; Elementary Secondary Education; Higher Education; *Induction; Learning Processes; Research Utilization; *Self Control; Teacher Education; Teacher Role; Teaching Methods; *Teaching Models

ABSTRACT

A teaching model is a distinct set of ordered steps or phases created to achieve certain outcomes. These outcomes are different for different models, although some similarities exist among certain models, thus permitting the formation of model "clusters." These clusters or families include the information processing family, personal family, social interaction family, and the behavioral family. Several models of teaching have been more heavily researched than others. Five of these models include: (1) Advance Organizer Model, developed by David Ausubel (1963); (2) Inductive Thinking Model, developed by Taba (1966); (3) Concept Attainment Model, developed by Brunner (1966); (4) Contingency Management Model, based on work by B. F. Skinner (1953); and (5) Self-Control Model, also based on the work of B. F. Skinner (1953). Each of these five models is described and an indication of its probable impact is discussed. Also discussed is each teaching model's relationship to a teacher education program. (JMK)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED246029

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☒ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

Models of Teaching And Teacher Education

Aivah M. Kilgore

University of Nebraska-Lincoln

The term "models of teaching" was used by Joyce and Weil (1972, 1980) as the title of a book about teaching. The authors defined a teaching model as a sequence of teaching skills or acts that are used to achieve predetermined objectives or ends, and usually are based upon the seminal work of a major psychologist or theorist, such as Skinner, Brunner or Taba. However, a few models were generated from the academic disciplines (e.g., the B.S.C.S. science inquiry model), and some were developed by researchers who observed teaching practices that seemed to work (e.g., Glasser's Classroom Meeting model or Roger's Non-directive Teaching model).

Teaching models differ from what we generally refer to as "methods" in the sense that methods of teaching are more general than are models of teaching. For example, the lecture method generally refers to didactic large group instruction where the teacher does all of the talking. A model of teaching, on the other hand, might encompass an oral presentation of one form or another (Kilgore, 1977), or the use of Advance Organizers (Ausubel, 1963), each of which might be subsumed under the general label of lecturing, a teaching method. Another example of this difference between teaching methods and models might begin with the general teaching method called inquiry. Teaching models subsumed under this label could include the Jurisprudential model (Oliver and Shaver, 1971), Inquiry Training (Suchman, 1962), or the Group Investigation Model developed by Thelan (1960).

A teaching model, then, is a distinct set of ordered steps or phases created to achieve certain outcomes. These outcomes are different for different models, although some similarities exist among certain models, thus permitting the formation of model "clusters." Joyce and Weil (1980) classified and labeled several clusters of models into larger groupings which they termed "families" (see Appendix A). Through such a structure of teaching models, educational researchers and practitioners are able to study models of teaching singularly, within families, or between families. They also can make teaching

SP 024 896

decisions as to what family, and model within a family, would be best suited to achieve an outcome desired by a teacher. In a sense, Joyce and Weil have done for teaching what Bloom has done for cognitive and affective levels of thinking. They have provided an organizational context and taxonomy for looking at different kinds of teaching, providing alternatives for teacher educators as well as teachers, and also providing a base for studying teaching patterns that heretofore have been somewhat elusive. Additionally, models of teaching can be used to shape curriculum in both a short and long term way, to aid in designing instructional materials and to guide instruction in the classroom.

Weil and Murphy (1982) wrote that research results have demonstrated that instructional processes make a significant contribution to student outcomes. Furthermore, different instruction processes appear to promote goals associated with those particular processes. Thus, instructional processes are generally designed to accomplish distinct objectives. Some researchers have not noted these differences and consequently have conducted studies which compared cereal and beefsteak rather than two kinds of beefsteak. This practice has led to ill-designed research. For example, the much maligned lecture method of teaching has often been used as a comparison method for inquiry types of teaching methodologies. Those doing the comparing were seeking to show that the inquiry method was better than the lecture method, but they did not take into account that the purposes, intended outcomes, and appropriate methods for measuring results of these methods were strikingly different.

Through the years, teaching models have become more theoretically based and delineated into clearly describable patterns of teacher behavior. This has facilitated the work of researchers documenting the contribution of teaching strategies (models) to educational outcomes. For instance, many of the isolated behaviors identified as part of the direct instruction repertoire of effective teachers have been more powerfully characterized by describing them in terms of a teaching model or strategy.

As mentioned above, Joyce and Weil (1980) organized different models of teaching into four families, which have been described more fully by Weil and Murphy (1982). The *Information Processing Family* of models addresses the ways students can improve their ability to master information, including capacities to organize data, generate concepts, solve problems, and use verbal and nonverbal symbols. The *Personal Family* of models addresses development of unique, individual realities, with attention to development of emotional life. The *Social Interaction Family* emphasizes the relationship of the individual to society or to other persons and seeks to improve one's ability to relate to others and to engage in the democratic process. The *Behavioral Family* shares a common theoretical base variously referred to as "learning theory," "social learning theory," and "behavior therapy." These models address a wide variety of goals but always with emphasis on changing behavior from less productive to more productive patterns.

When creating the concepts and models found in *Models of Teaching*,

Joyce and Weil became convinced that there was not a "right" way to teach. Rather, there were many "right" teaching strategies available for teachers to use in trying to teach the variety of students that one normally finds in a classroom. One might recall that during the 1960's and early 1970's each of several developers of teaching programs suggested that he or she had a monopoly on how to teach. Among the strategies developed were the Hilda Taba Teaching Strategies Program, Individually Prescribed Instruction (IPI), Individually Guided Education (IGE), and Man: A Course of Study, a curriculum that was based on a particular teaching strategy. Each of these programs, and the behaviors that were espoused for teachers within the program, could be construed as a model of teaching.

Joyce and Weil's position (1972) is that " . . . we should not limit our methods to any single model, however attractive that model may seem at first glance, because no model of teaching is designed to accomplish all types of learning or to work for all learning styles" (p.1). Rather, a teacher must acquire a "repertoire" of teaching skills, strategies and models, and know how and when to use them in a multitude of teaching situations in much the same way that a doctor must be able to call upon a variety of medicines and treatments to cure a patient or an engineer must use a variety of skills to design and build a bridge. This concept seems especially valid if one takes into consideration the research on learning styles, limited as it is at this time. Additionally, teachers continue to teach groups (classes) of children rather than individuals, and grouping policies and practices generally do not reflect learning styles as much as they do reading ability.

This paper is organized around (a) five models of teaching, drawn from two of the Joyce and Weil families, with the discussion of each model having both a description and an indication of the model's probable impact, and (b) the relationship of models of teaching to a teacher education program.

Selected Models of Teaching

Several models of teaching have been more heavily researched than others. Five of those models are described in this paper. A sixth model that has a comprehensive research base, direct teaching is discussed by Bruning in this monograph. (See paper by Bruning, this volume.) In addition, in this monograph, Santmire discusses the applications of research done by Piaget and other developmentalists in rationalizing the use of different instructional strategies with children and youth at differing stages of development. Although based on much the same research foundation as Joyce and Weil's "Cognitive Development" model, which they classify as a member of the Information Processing Family, Santmire's discussion is somewhat more inclusive than a single model.

Three other models from the Information Processing Family have also been rather comprehensively researched. They are: *The Advance Organizer* model, (Ausubel, 1963); *The Inductive Thinking* model (Taba, 1966); and the *Concept Attainment* model (Bruner, 1966). Two additional models from the

Behavioral Family also have an extensive research base. Both of these flow from the work of Skinner (1953). They are the *Contingency Management* model (behavior modification) and the *Self Management* strategy. These five models with their research bases, are those that are described and analyzed in this paper.

The Advance Organizer Model

Developed by David Ausubel (1963, 1968), this model is of interest to teacher educators for three reasons: first, it is one of the most heavily researched of all teaching strategies; second, it is relatively easy to learn yet has great impact; and third, it has general applicability for it uses the lecture and recitation aspects of teaching behaviors as a base. Ausubel's theory centers on the idea that organizers should be introduced in advance of new learning tasks and should be formulated so that they take into account ideas and concepts already existing in the cognitive structure of the learner. Ausubel defines advance organizers

> . . . as introductory material at a higher level of abstraction, generality, and inclusiveness than the learning passage itself, and an overview as a summary presentation of the principal ideas in a passage that is not necessarily written at a higher level of abstraction, generality, and inclusiveness, but achieves its effect largely by the simple omission of specific detail" (Ausubel, 1978, p. 251).

The Advance Organizer model does not purport to apply to all school learning, such as rote learning, motor skills, perceptual learning, concept formation, thinking or problem solving. Ausubel asserts, however, that his model covers the *major* cognitive learning activities that take place in school, the kind of learning that constitutes the primary objective of the school as a social institution and that is the efficient and meaningful transmission of the important subject matter disciplines. The model is based on research and theory of how humans learn and *retain* large bodies of subject matter in classrooms. The theory is limited to reception learning and retention, i.e., learning that includes the notion of the content (what is to be learned) as being *presented* to the learner rather than having the learner independently discover the same material.

The material to be learned, the content, appears to be as important to the use of this model as the model itself. Ausubel wrote that generally all subject areas are developed in a hierarchy of concepts and relationships between concepts. The role of a teacher is to know the subject area and its structure along with the students' level of knowledge about the content to be learned, and to create an advance organizer lesson using both of these factors. If teachers provide students with advance organizers, the new material to be learned and time to integrate the new material into previously learned structures, students will retain and use these data to a significantly higher degree than will students of teachers who do not use advance organizers.

Ausubel's research has shown a consistent 12 to 20 percent increase in gain scores for students of teachers using this model (Ausubel, 1978). Other

researchers following Ausubel's lead have reported gain scores up to 50 percent higher for students taught using the model (Lawton and Wanska, 1977).

Ausubel's work has not gone uncriticized. Barnes and Clawson (1975), based on a review of 32 studies on the uses of advance organizers, concluded that their efficacy had not been established. In responding to the Barnes and Clawson critique, Lawton and Wanska (1977) indicated that the critique of the advance organizer strategy was based on poor information and interpretation of data on the part of Barnes and Clawson, but that Ausubel's work did need additional investigation. More specifically, Lawton and Wanska suggested that (1) techniques should be developed for identifying and constructing organizers for particular types of learning, (2) the relationship between the concept of advance organizers and associated expository teaching techniques and learning activities needs further refinement, and (3) several stages and factors need to be considered in developing and evaluating advance organizers. Ausubel (1978), in turn, accused his critics of superficiality in their review methodology as well as a gross misinterpretation of "operational definition" in their criticism of his definition of advance organizers. He cited several recent studies in which teachers used advance organizers as intended. The results indicated that subject matter was learned more effectively by more types of learners, a more complete understanding of the subject area was accomplished, children's cognitive movement was facilitated from preoperational to concrete operational, and that there were increases in mean learning scores. From the evidence presented by Ausubel and others, it appears that advance organizers, when used with the expository method, constitute a viable teaching model that can be learned by pre- and in-service teachers and that this model should become part of a teachers' repertoire of teaching skills.

The Inductive Thinking Model

Taba (1966), in synthesizing the available research on thinking, thinking styles and strategies, concluded that a new teaching strategy and a new role for the teacher had emerged, which was to stimulate cognitive processes in children. In order to accomplish this role effectively, teachers had to have a "cognitive map" of the concepts and mental operations involved in the various learning tasks to be able to diagnose the type and the level of thought processes children bring to the tasks. When Taba reviewed the research on teaching available at that time, she concluded that, with training, teachers could be taught how to develop thinking skills in students. From this base she developed a series of teaching strategies that, when employed by a teacher, should have a variety of useful effects on students. These effects, in varying degrees, would include (1) use of higher level thinking skills, (2) better retention and use of factual information, and (3) increased ability of students to use this information in the form of concepts and generalizations. Taba thought that use of these strategies also would lead to better self images as well as improved interactive skills.

The specific teaching strategies developed by Taba, and labeled as the

Inductive Teaching Model by Joyce and Weil, were the tasks of concept formation, inferring and generalizing, and the application of principles. Each of these tasks could be viewed as a separate teaching model, for each can be operated independently and each can be taught to teachers as a separate strategy.

Taba also constructed a curriculum which included the use of these tasks as a part of the behavior required by a teacher. Using students and teachers at the elementary level, an experimental research program was conducted to test the efficacy of her theory. The experimental design included organizing a new curriculum plus training teachers to develop cognitive processes in their students. The study had a single target, the development of cognitive processes (thinking skills) in children. The study examined the relationship of the target objective to: student content achievement, intelligence, economic status and reading and language ability. In the process, the functions of the individual teacher acts and of the combinations of these acts were also studied. Taba reached two major conclusions based on this study. First, thinking levels of children could be raised with the application of the stimuli put forth by the teacher and the material to be studied. Second, teachers could be taught to use these teaching strategies in their classrooms.

After Taba's death in 1969, her work was carried on by several of her students and colleagues. One such program, titled the *Hilda Taba Teaching Strategies Program* and sponsored by the Institute for Staff Development, became a widespread effort involving several cities and states in training teachers to utilize the teaching models developed by Taba.

Another contribution from Taba concerned considerations teachers use when making decisions about teaching. Taba originally was a curriculum worker. She began her studies of teaching when she observed few operational relationships between curriculum development and what occurred in classrooms and concluded that something needed to be developed to help bridge the gap between teaching and the curriculum being taught. She wrote that decisions regarding teaching strategies are affected first by the nature of the content taught and second by one's view of that content.

The Concept Attainment Model

The study of concepts and conceptual thinking has a rich history in psychology dating back to the original studies by Hull (1920). More recently, Bruner's contributions have been critical. They are twofold. First, his seminal work on concept attainment was published in *A Study of Thinking* (1956) and provided the basis for his second contribution, his follow-up work on the teaching of concepts.

The development of concepts is primarily a categorization process. In order to think, people need to categorize. There are primarily two ways to categorize, perceptually and conceptually. Perceptual categorization is an immediate phenomenon, accomplished primarily through visual stimuli. As an object is observed, it is generally placed into some category of similar objects. Conceptual categorization is harder to define and identify, for the use of a

particular concept requires a specific experiential background. That is, the observer must be able to compare or relate the new phenomenon with past experiences or concepts. Bruner et al. (1966) provided the rationale for the importance of categorization by writing that categorization (1) reduces the complexity of the environment, (2) is the means by which the objects in the world about us are identified, and (3) reduces the necessity of constant learning. The concept attainment activity, then, is the process of finding predictive and defining attributes that distinguish exemplars from nonexemplars of the concept one seeks to attain.

Results of the research on concept attainment indicated that (1) concept attainment strategies and shifts in strategies can be located and described; (2) people, when categorizing or identifying exemplars from nonexemplars, especially with something new, will fall back to cues that worked in the past, whether the exemplars seem to fit the situation or not; (3) people are generally not willing to use nonexemplars of the concept to help them delimit the correct concept because this task calls for a transfer of thinking and people generally would rather not work with such transfers to help them make a decision. Additional findings indicated that subjects in the studies were flexible, that is, they could jump to conclusions when forced to under pressures of time or limited exemplars, and that subjects always seemed to try to reduce the exemplars to simpler, more easily ascertained cues. Finally, people could not generally describe how they arrived at a concept; they appeared to just "muddle" through (Bruner et al., 1956).

These early findings were important because it was from them that Bruner and his associates developed the model of teaching titled Concept Attainment (Bruner et al., 1977). In order to teach different types of concepts to different types and ages of learners, Bruner et al. (1977) developed three variations for Concept Attainment. In the first variation, exemplars are provided to students; these exemplars are labeled as exemplars or nonexemplars of the concept. This is called the reception mode. In this mode, the teacher's role is to help students see the relationship between exemplars as well as understand why nonexemplars are not a part of the concept being sought. Like Taba, Bruner indicated that the teacher must have a full understanding of the concept being sought in order to help students attain the concept. The second variation in concept attainment has been labeled the selection mode. In this mode, students are presented with a group of unlabeled exemplars and they ask questions about the various exemplars. The teacher provides the category (exemplar or nonexemplar) and students then generate and test their hypotheses. The third, and most difficult mode, is the unorganized materials mode. During this activity, students view the material presented by the teacher, locate and label the concept, and then identify additional exemplars for the concept. Each of Bruner's three modes of concept attainment is concluded by having the students identify the thinking processes used to arrive at the concept. This is especially important because as students learn how to categorize more effectively and as they learn how they arrived at their categories, their ability to attain concepts increases.

The concept attainment model may be used with all ages and grade levels. It allows a teacher to teach concepts which are both the key building blocks of instructional materials and the main element of a learner's cognitive structure. The model not only can be used to introduce extended series of inquiries into important areas, but also can support ongoing inductive study where the learning of concepts is important. Finally, use of the model has been found to be an excellent motivator, for students can become excited about studying when they are contributing to the attainment of the concept under study.

The Contingency Management Model

The Contingency Management Model, and the model to follow (The Self-Management Strategy), both flow from the work of B. F. Skinner. In his book, *Science and Human Behavior*, Skinner (1953) outlined his premises and rules for operant conditioning and explained the research leading to his conclusions and rules. It was from these basic notions that behaviorist research for the next two decades was conducted and from which most of the behaviorist practices currently in classroom use evolved. Operant conditioning is based on carefully programming the consequences following a given response and relies heavily on principles of reinforcement. Since the publication of *Science and Human Behavior*, there has been an immense amount of research and writing conducted concerning various phases, structures and uses of behaviorism. The most extensive use of these principles in education can be found in special education classes and in classroom management practices (Becker, Engelmann & Thomas, 1975a). A teacher, for instance, can improve classroom management by learning how to reinforce students for appropriate instead of inappropriate behavior. The Contingency Management Model relies mostly on the principles of operant conditioning, particularly reinforcement practices. Practices associated with this model in schools include the systematic control of reinforcers so that they are presented at selected times and only after the desired response has been given. A positive reinforcer increases the probability that the desired behavior will be repeated. If reinforcement activities are not used after a given behavior, the behavior may soon disappear.

Reinforcers can be positive or negative. Both work to a degree; however, positive reinforcers (e.g., smiles, praise, touches, tokens) work more effectively than do negative reinforcers (e.g., yelling, nagging and threatening). Negative reinforcers, sometimes called punishment, frequently create undesirable side effects such as disliking school and/or teacher or developing a poor self-image. Contingency management emphasizes positive reinforcement and specifically discourages the use of negative stimuli.

Three types of positive reinforcers are used most commonly in schools. The first type of reinforcer is social in nature, such as a hug, approval, a smile, attention. Social reinforcers work effectively with young children. A second type of reinforcer is material in nature, e.g., tokens, candy, toys, stars on a chart after one's name, displays of students' work, etc. The last group of

reinforcers is labeled activity reinforcers and generally refer to promising participants the opportunity to engage in a more desirable activity once the initial activity is successfully completed. An example of this type of reinforcer was described in a mastery learning situation whereby students could leave school for a day upon successful completion of a unit of work. The data from researchers concerning the types and uses of reinforcers is not consistent; however, a combined application of several reinforcers may be more effective in increasing desirable behavior and in reducing deviant behavior than any single reinforcer (Becker, Engelmann & Thomas, 1971).

Another area in which contingency management practices appear to work well is in programmed instruction. Learning units are constructed so that students can achieve a high degree of success, materials are carefully presented in small, sequential steps, and immediate feedback is given as to correctness of the student's response. Programmed instruction is most often developed for individual students; however, there are programs available for small groups of students who have been diagnosed as being at about the same level (e.g., Becker, Engelmann & Thomas, 1975b).

There is a great deal of material and research concerning the use of the contingency management model of teaching. The following procedures were derived from the research for organizing the learning environment when using the model: (1) specifying the final performance desired; (2) assessing entering behavior (diagnosing); (3) formulating a contingency management program or plan; (4) instituting the program; and (5) evaluating the program (Joyce & Weil, 1980). Joyce and Weil also offered a cautionary note with respect to the expectations for using the model. They wrote that even with the impressive and well-documented history of the model, with many facets of learning and many types of learners, " . . . reinforcement is not effective all the time with every student. Certain elements contribute to the success of reinforcement" (p. 343). For example, young children respond more to social reinforcers; the nature of the reinforcer is a factor; people have different personality styles, and contingency management principles may work better with some learning styles.

The Self-Control Model

The principles of operant conditioning as described by Skinner (1953) and utilized so effectively in the Contingency Management Model are also applicable in the Self-Control Model. The major difference is that the reinforcement responsibilities are under the control of the participant. Part of the rationale for moving toward self-control as a teaching model is that for many behaviors the school environment is unlikely to provide incentives at the rate and time that an individual might need them in order to establish a new behavior.

The activities of the self-control model are similar to contingency management; the major difference is that students are made aware of the process and, as much as possible, given responsibility for decisionmaking. The research on self-management suggests that there should be a gradual phasing

in of student responsibility for decisionmaking. The major phases of the model include: (1) providing the student with an introduction to behavior principles and skills; (2) establishing baseline data about the target behavior (e.g., establishing weight if going on a weight loss or gain program), and teaching the procedures for self assessment; (3) setting up the contingency program, which may include self-administration of contingencies, self-determination of contingencies, and self-instruction techniques; (4) implementing and modifying the self-management program; and (5) withdrawal of contingencies. It is important to note that self-control processes must be taught, not just told to the students (Joyce & Weil, 1980).

Research on Learning the Models of Teaching

A basic premise of the use of *Models of Teaching* is that there is not a single best way to teach and that process-product research has not identified many generic teaching behaviors. This inability of finding substantive generic teaching behaviors has puzzled researchers even though a few teaching behaviors and practices such as clarity, variability of discourse, and enthusiasm, (Rosenshine & Furst, 1971) and time-on-task (Stallings, 1983) have been identified positively with increased pupil learning. Joyce (1981) and the models of teaching researchers hypothesized that teachers teach in patterns of behaviors, that is, clusters and sequences of activities rather than concentrating on specific, single teaching skills, and that if specific teaching behaviors were used it would be in combination with other skills. They further speculated that teaching sequences could be learned, and if teachers were to develop a "repertoire" of teaching models and skills that outcomes in terms of student learning could be measured. These notions were supported by theorists such as Eisner (1983) who referred to the teacher as an artist who orchestrated the content to be learned, knowledge of the learners and the ability to perform several teaching skills into an artistic whole; and researchers such as Gage (1979) who referred to the modern teacher as having to develop and utilize the "science of the art of teaching."

One of the early studies on the use of teaching models utilized twenty-six post baccalaureate students who were exposed to three models of teaching throughout a year-long training program. The primary research question asked was whether it was possible to use instructional systems to teach a repertoire of teaching models to a sufficient degree that the trainee could actualize them in a classroom. Results indicated that the trainees did shift their patterns of verbal interaction with students in the directions specified by the models. When compared with the teaching style of the cooperating teacher (who was not trained in models of teaching), the trainee's non-model teaching style was somewhat related to the cooperating teacher's style, but the model practice behavior was not related to the model of the cooperating teacher. Few cooperating teachers exhibited the behaviors that were critical to the models of teaching. The teacher trainees had to introduce new patterns of

teaching into the classrooms if they were to implement the models they had learned (Seperson & Joyce, 1973). Another result from the study related to conceptual level theory (Harvey, Hunt & Shroder, 1961). Conceptual theory would indicate that one's ability to conceptualize at an abstract level would allow one to learn and utilize a variety of information, in this instance, a number of teaching models. Participants did learn to utilize three models of teaching in addition to their predetermined teaching style and also those behaviors practiced by the cooperating teachers. It was thought that conceptual levels could be changed by the increased use of teaching models (Joyce, Wald & Weil, 1981).

Research has been conducted to determine the possibility of training teachers in the Taba models. One such study utilizing 2000 teachers in San Diego reported modest gains in both teacher behaviors and attitudes toward teaching as a result of participating in a year-long inservice program centered around the teaching models developed by Taba (Stickel, 1972). Another study indicated that preservice students could be taught to use the Taba models in micro-teaching and field-based situations, provided support systems were available for the students (Kilgore, 1977).

Additional research on learning a repertoire of teaching models was conducted by Joyce and Showers (1981) and Showers (1983). Results from these studies indicated that a teacher's familiarity with the recommended teaching practices (how foreign they are to the teacher's existing repertoire) may be an important factor influencing the choice of training activities. Teachers who were less familiar with the models learned in workshops tended to need additional training activities after presentation and demonstration (Joyce & Showers, 1982). It was also found that a teacher's conceptual level was positively related to transfer of training among coached teachers; more abstract thinkers were more capable of using the recommended models of teaching as intended. Among uncoached teachers, no relationships were found between conceptual level and ability to use a specific teaching model. Training that was most effective included theory, demonstration, practice, feedback, and classroom application (Showers, 1983). In these studies, coaching referred to the practice of having trainers visit with and observe trainees as they practiced the newly acquired teaching models in their classrooms and provide feedback on skill development and model use. It would appear that the same principles could be applied to undergraduate teacher trainees within their methods courses and field experiences.

A synthesis of the research on preparing preservice students to use models of teaching found that, as with practicing teachers, the higher the conceptual level of a preservice student, the greater the teaching repertoire he or she could learn. Inservice teachers could learn models of teaching at a faster rate than preservice students, could recall and utilize the models more effectively when asked, but would not use models in a regular teaching situation unless the training program had the coaching element built in (Joyce & Showers 1982). Similarly, preservice student teachers could use a model of teaching when asked; however, more often than not the student teacher imitated the

behavior of the cooperating teacher regardless of preservice training. Specifically, the young teachers-to-be tended to become less rewarding, more punishing, and less negotiating toward children. Also, they dominated the conversation more and asked fewer "higher order" questions. It took an extremely powerful training intervention to alter this general behavior pattern (Joyce, Brown & Peck, 1982). The powerful impact of the cooperating teacher has been well documented (Kilgore, 1979). Kilgore also found, however, that training cooperating teachers in the same models of teaching as the preservice students resulted in both cooperating teachers and student teachers utilizing the models more effectively and more frequently, and that pupil behavior and outcomes moved toward the intended outcomes of the model of teaching being used.

Summary and Discussion

Individual models of teaching generally have a strong research base. Many of the models were developed as a researcher's or theorist's answer to what effective teaching should be; other models were developed to enhance curricular programs. Early research on teaching models was generally comparative in nature, that is, one model or procedure was compared to another in an attempt to prove that one was better than the other. This was especially true concerning comparison of certain teaching models to the lecture method of teaching. Most researchers felt that what they espoused had to be more effective as a teaching process than the lecture. Each model (including the lecture) has subsequently been found to be effective, in some part, within a learning sequence. Teachers do teach in patterns or styles, and their teaching styles can be expanded with the addition of teaching models.

The concept of a teacher having a minimum "repertoire" of teaching models has been the focus of recent research. Teachers can learn and use a variety of teaching models if appropriate environmental and personality conditions are present. Students of teachers who use such a repertoire appear to gain in learning in the directions indicated by the models being used. Additionally, as teachers must teach to groups of students, and students have various learning styles, then it stands to reason that teachers should have a variety of teaching skills and models at their command in order to reach a greater number of students.

Finally, both preservice and inservice teachers can learn to operate a variety of teaching models and use them upon request or as needed. Experienced teachers can learn and implement a new model faster and with more understanding than an undergraduate in training. An appropriate number of models for a teaching repertoire has yet to be determined, but a teacher's preparation should include the ability to use at least one model from each family of models.

Instruction in models of teaching should become a major component of teacher education programs, especially at the methods course and field ex-

perience levels, with the research foundation being laid in the human development and learning course. Faculty should determine which models should be learned by preservice students in general methods as well as content specific methods courses. Special consideration should be given to those models that have a substantial research base such as those reviewed in this paper and to those presented by Bruning and Santmire, elsewhere in this document. Familiarity with models of teaching should help preservice students develop the type of needed decision-making skills presented by Walter elsewhere in this monograph.

Inclusion of models of teaching in the training program obligates the training institution to do two things to insure that the student has indeed learned and can apply the models. First, the training program must include a sequence that allows the student to learn the theory, see demonstrations, have practice and receive feedback (perhaps micro or peer teaching), and have opportunities to apply the model in the classroom during pre-student teaching and student teaching field experiences. The program must have a very strong intervention aspect in order to compensate for the fact that student teachers will imitate a cooperating teacher's behavior regardless of the training program. The second portion of the strategy would be to identify or train cooperating teachers in operation of the models of teaching being espoused by the training institution and then place the preservice students with those cooperating teachers.

References

Ausubel, D. (1963). *The psychology of meaningful verbal learning*. New York: Grune & Stratten, Inc.

Ausubel, D. (1968). *Educational psychology: A cognitive view*. New York: Holt, Rinehart & Winston.

Ausubel, D. (1978). In defense of advance organizers: A reply to the critics. *Review of Educational Research, 48*(2).

Barnes, B. R., & Clawson, E. V. (1975). Do advance organizers facilitate learning? *Review of Educational Research, 45*(2).

Becker, W. C., Engelmann, S., & Thomas, D. R. (1971). *Teaching: A course in applied psychology*. Chicago: Science Research Associates.

Becker, W. C., Engelmann, S., & Thomas, D. R. (1975a). *Teaching 1: Classroom management*. Chicago: Science Research Associates.

Becker, W. C., Engelmann, S., & Thomas, D. R. (1975b). *Teaching 2: Cognitive learning and instruction*. Chicago: Science Research Associates.

Brown, C. C. (1981). The relationship between teaching styles, personality and setting. In *Flexibility in teaching*. New York: Longman, Inc.

Bruner, J. S., Goodnow, J. J., & Austin, G. A. (1966). *A study of thinking*. New York: John Wiley & Sons, Inc.

Bruner, J. S., Goodnow, J. J., & Austin, G. A. (1977). *A study of thinking.* Huntington, NY: Robert E. Krieger.

Bruning, R. H. (1984). Key elements of effective teaching in the direct teaching model. (This volume.)

Eisner, E. (1983). The art and craft of teaching. *Educational Leadership, 40.* 4, Washington, DC: A.S.C.D.

Gage, N. L. (1979). *The scientific basis of the art of teaching.* New York: Teachers College Press, Columbia University.

Glasser, W. (1965). *Reality therapy.* New York: Harper & Row Publishers, Inc.

Harvey, O. J., Hunt, D. E., & Schroder, H. M. (1961). *Conceptual systems and personality organization.* New York: Wiley.

Hull, C. L. (1920). Quantitative aspects of the evolution of concepts. An experimental study. *Psychological Monographs, 28(*2), Whole No. 124, 1-55.

Hunt, D. E. (1970). A conceptual level matching model for coordinating learner characteristics with educational approaches. *Interchange, 1(*2).

Joyce, B. R., & Weil, M. L. (1972). *Models of teaching.* Englewood Cliffs, NJ: Prentice Hall, Inc.

Joyce, B. R. & Weil, M. L. (1980). *Models of teaching* (2nd ed.). Englewood Cliffs, NJ: Prentice Hall, Inc.

Joyce, B. R., Brown, C. C., & Peck, L. (1981). *Flexibility in teaching: An excursion into the nature of teaching and training.* New York: Longmon, Inc.

Joyce, B. R., & Showers, B. (1980, February). Improving inservice training: The messages of research. *Educational Leadership, 37.*

Joyce, B. R., & Showers, B. (1981). *Teacher training research: Working hypotheses for program design and directions for further study.* Paper presented at the annual meeting of the American Educational Research Association, Los Angeles, CA.

Joyce, B. R., & Showers, B. (1982, October). The coaching of teaching. *Educational Leadership, 40.*

Joyce, B. R., Wald, R., & Weil, M. L. (1981). Can teachers learn repertoires of models of teaching? In *Flexibility in teaching.* New York: Longman, Inc.

Kilgore, A. M. (1978). *Didactic teaching models: The oral presentation.* Unpublished manuscript, University of Nebraska, Lincoln, NE.

Kilgore, A. M. (1979, July-Aug). Pilot project shows definite link between pre-, in-service education. *Journal of Teacher Education,* Vol. XXX, No. 4.

Lawton, J. T., & Wanska, S. K. (1977). Advance organizers as a teaching strategy: A reply to Barnes and Clawson. *Review of Educational Research, 47(*2).

Oliver, D., & Shaver, J. P. (1966). *Teaching public issues in the high school.* Boston: Houghton Mifflin Co.

Piaget,J. (1952). *The origins of intelligence in children.* New York: International University Press.

Rogers, C. (1971). *Client centered therapy.* Boston: Houghton Mifflin Co.

Rosenshine, B., & Furst, N. (1971). Research on teacher performance criteria. In B. O. Smith (Ed.), *Research in teacher education: A symposium.* Englewood Cliffs, NJ: Prentice Hall, Inc.

Santmire, T. E., & Friesen, P. H. (1984). A developmental analysis of research on effective teacher-student interactions: Implications for teacher preparation. (This volume.)

Schwab, J. J. (1965). Biological sciences curriculum study. *Biology teachers handbook.* New York: John Wiley & Sons, Inc.

Seperson, M. A., & Joyce, B. R. (1973, 1981). The relationship between the teaching styles of student teachers and those of cooperating teachers. In *Flexibility in teaching.* New York: Longman, Inc. (Reprinted from *Educational Leadership,* 1973).

Showers, B. (1983). *Transfer of training.* Paper presented at the annual meeting of the American Educational Research Association, Montreal, Canada.

Skinner, B. F. (1953). *Science and human behavior.* New York: Macmillan, Inc.

Stallings, J. (1983, November). *Implication for the research on teaching for teacher preparation.* A paper presented at the Nebraska Consortium for the Improvement of Teacher Education Workshop, Lincoln, Nebraska.

Stickel, W. E. (1972). *Effects of the Hilda Taba teaching strategies program on verbal behavior and attitudes of teachers.* Unpublished doctoral dissertation, United States International University, San Diego, CA.

Suchman, J. R. (1962). *The elementary school training program in scientific inquiry.* Report to the U.S. Office of Education, Project Title VII, Project 216. Urbana, IL: University of Illinois.

Taba, H. (1966). *Teaching strategies and cognitive functioning in elementary school children* (Cooperative Research Project 2404). San Francisco: San Francisco State College.

Thelan, H. (1960). *Education and the human quest.* New York: Harper and Row, Publishers, Inc.

Weil, M. L., & Murphy, J. (1982). Instructional Processes. In *Encyclopedia of educational research.* New York: The Free Press.

APPENDIX

MODELS OF TEACHING* ORGANIZED BY FAMILIES

Information Processing Models: A Selection

MODEL	MAJOR THEORIST	MISSION OR GOAL
Inductive Thinking Model	Hilda Taba	Designed primarily for development of inductive mental processes and academic reasoning or theory building, but these capacities are useful for personal and social goals as well.
Inquiry Training Model	Richard Suchman	
Scientific Inquiry	Joseph J. Schwab (also much of the Curriculum reform Movement of the 1960's)	Designed to teach the research system of a discipline, but also expected to have effects in other domains sociological methods may be taught in order to increase social understanding and social problem solving).
Concept Attainment	Jerome Bruner	Designed primarily to develop inductive reasoning, but also for concept development and analysis.
Cognitive Growth	Jean Piaget Irving Sigel Edmund Sullivan Lawrence Kohlberg	Designed to increase general intellectual development, especially logical reasoning, but can be applied to social and moral development as well (see Kohlberg, 1976).
Advance Organizer Model	David Ausubel	Designed to increase the efficiency of information-processing capacities to absorb and relate bodies of knowledge.
Memory	Harry Lorayne Jerry Lucas	Designed to increase capacity to memorize.

*From *Models of Teaching* by Bruce Joyce and Marsha Weil, 1980.

Personal Models: A Selection

MODEL	MAJOR THEORIST	MISSION OR GOAL
Nondirective Teaching	Carl Rogers	Emphasis on building the capacity for personal development in terms of self-awareness, understanding, autonomy, and self-concept.
Awareness Training	Fritz Perls William Schutz	Increasing one's capacity for self-exploration and self-awareness. Much emphasis on development of interpersonal awareness and understanding as well as body and sensory awareness.
Synectics	William Gordon	Personal development of creativity and creative problem solving.
Conceptual Systems	David Hunt	Designed to increase personal complexity and flexibility.
Classroom Meeting	William Glasser	Development of self-understanding and responsibility to oneself and one's social group.

Social Interaction Models: A Selection

MODEL	MAJOR THEORIST	MISSION OR GOAL
Group Investigation	Herbert Thelen John Dewey	Development of skills for participation democratic social process through combined emphasis on interpersonal (group) skills and academic inquiry skills. Aspects of personal development are important outgrowths of this model.
Social Inquiry	Byron Massialas Benjamin Cox	Social problem solving, primarily through academic inquiry and logical reasoning.
Laboratory Method	National Training Laboratory (NTL) Bethel, Maine	Development of interpersonal and group skills and, through this, personal awareness and flexibility.
Jurisprudential	Donald Oliver James P Shaver	Designed primarily to teach the jurisprudential frame of reference as a way of thinking about and resolving social issues.
Role Playing	Fannie Shaftel George Shaftel	Designed to induce students to inquire into personal and social values, with their own behavior and values becoming the source of their inquiry.
Social Simulation	Sarene Boocock Harold Guetzkow	Designed to help students experience various social processes and realities and to examine their own reactions to them, also to acquire concepts and decision-making skills.

Behavioral Models: A Selection

MODEL	MAJOR THEORIST	MISSION OR GOAL
Contingency Management	B. F. Skinner	Facts, concepts, skills
Self-Control	B. F. Skinner	Social behavior/skills.
Relaxation	Rimm & Masters, Wolpe	Personal goals (reduction of stress, anxiety).
Stress Reduction	Rimm & Masters, Wolpe	Substitution of relaxation for anxiety in social situation.
Assertive Training	Wolpe, Lazarus, Salter	Direct, spontaneous expression of feelings in social situation.
Direct Training	Gagne Smith and Smith	Pattern of behavior, skills.